Exploring Marginalized Youth Access to Outdoor Spaces for Recreation in Columbus, OH: Perspectives of Greater Hilltop Community Youth Service Providers

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Abstract

There is an ever-growing body of research regarding the role of the natural environment in relation to children's development and health. Erik Erikson identified eight developmental stages; adolescence (ages 12-18) is the fifth stage. The main developmental challenge at this stage is identity versus role confusion. During this stage youth ego identity begins to crystalize (Orenstein 2020). Development can be defined as "a lasting change in the way in which a person perceives and deals with [their] environment" (Bronfenbrenner 1979, p. 3). Bronfenbrenner's ecological theory of development identifies five nested structures where development is profoundly affected by events occurring in settings the developing person is present in, and settings the developing person is not present (Bronfenbrenner 1979). The Centers for Disease Control and Prevention identified five social determinants of health: economic stability, education, social and community context, health and health care, and neighborhood and built environment. Using perspectives of organizers, and administrators who work with youth in the Greater Hilltop area, I addressed how marginalized adolescents access outdoor spaces for recreation in their community. Specifically, I explored what outdoor places and spaces adolescents' access for recreation, how they use it, strengths and barriers to currently available outdoor space and association with adolescent health. Results of the study captured how the ecological systems domains influence adolescent access to outdoor spaces for recreation in the Greater Hilltop community and health. All systems were reflected in interview responses except the chronosystem. The mesosystem was the most identified system, which is consistent as the majority of interviewees are involved with adolescents in the out of school setting. This research affirms the need for more research to understand the relationship between natural outdoor recreation spaces in the urban environment and adolescent health.

Dedication & Acknowledgements

Firstly, all thanks are given to the Most High, Spirit Guides, my ancestors, and loved ones for the opportunity to utilize my vessel to promote healing though the profession of social work. This thesis is dedicated to my inner child and youth currently surviving adverse childhood experiences. I'd also like to dedicate this work to the extraordinary social workers that stepped into mission before me: my mother, Arcelia Armstrong and (late) great aunt Addie Hudson. This is also dedicated to my best friends: Grace Kwiatkowski & Aurelian Greeno for supporting my authentic expression. Also, my sister, Victoria Parsons, grandmother: Cuvator Armstrong, grandfather: Henry Armstrong and my aunt and uncle. This is also dedicated to the familiars that kept me grounded through my adolescence and emerging adult years: my rabbit, Milkshake, lovely dog, Mila Marie, and Rockne. I am also dedicating this to family and friends that have transitioned during my time at Ohio State: Ogaretta Harvey (great grandmother), Khy Armstrong, Silvia Rodriguez, Terry Glenn Jr. and Daniela Camarena-Romero. I am forever grateful to have shared this Earth with you all and offer this research to you honor your legacies.

I also want to acknowledge the College of Social Work, my advisor, Stacy Song. Thank you to my research advisor, Dr. Shannon Jarrott, your authenticity, encouragement, and guidance during this unique year was so integral to the successful completion of this work. I'd also like to thank Undergraduate Studies Director, Jennie Babcock, for her enthusiasm, creativity, and cultivating a space that is truly student centered. Thank you to all the organizations and representatives that participated in this research: Highland Youth Garden, Gladden Community House, Hilltop YMCA, Franklinton Farms (Patrick Kaufmann Memorial Learning Gardens), and Capital & Central High Schools- I am forever grateful for the opportunity to learn more about the Greater Hilltop community of Columbus, Ohio and meet with such genuine individuals.

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Chapter 1: Introduction

The state of Ohio was originally occupied by multiple native American tribes, namely, in Southern Ohio, the Shawnee stayed near the Scioto River. The Shawnee migrated from their original place of present-day South Carolina and Tennessee (Ohio Historical Society). In 1720 they were forced further west into the upper Ohio river valley. In August of 1795 General Anthony Wayne and native tribes officially signed the Treaty of Greeneville. Two-thirds of Ohio's native land was given up and they were forced to occupy northwest Ohio above the treaty line (Ohio Historical Society). In 1795 Lucas Sullivant, as a deputy surveyor, claimed land following the revolutionary war in the Hilltop area. As payment Sullivant received one-fourth to one-half of surveyed land (Miller). Sullivant granted his sons, William and Michael, 1,600 acres of present-day Hilltop (Miller). Settled in 1812 the city of Columbus became incorporated February 10th, 1816. In 1844 the last Wyandot reservation in Upper Sandusky was abandoned and marked the formal end to native tribes in Ohio. During the civil war in 1861 a union training camp named Chase was established in present day Hilltop and closed in 1865. On March 1st, 1803, Ohio was established as the seventeenth state in the U.S and in 1816 the City of Columbus was established (Miller & Truett, n.d.).

Ohio State University currently occupies the contemporary and ancestral land of the Shawnee, Pitawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, Ojibwe, and Cherokee people (Land Acknowledgement 2020). The land was granted through the Treaty of Greenville and the Indian Removal Act of 1830. In 1877, the Columbus State Hospital for the Insane was built in Hilltop, formerly the Lunatic Asylum of Ohio. Hilltop, originally known as Sullivant's Hill was perceived as good real-estate because of its geographic location on top of a hill (Envision Hilltop 2020). The Great Flood of 1913 flooded nearby Franklinton and attracted

many residents. In the 20th century Hilltop was considered a middle/working class streetcar suburb which was attractive as residents had easy access to transportation and to the city. Even though Hilltop was not segregated by law, it was by practice. Black people were largely limited to living in certain areas; Streets: Wayne, Oakley, Wheatland, Highland, and Clarendon, South of Broad Street (Envision Hilltop 2020).

Nationwide Children's Hospital published a 2019-2021 Community Health Needs Assessment for Franklin County. The data for the assessment came from local, state, and national sources. In 2019, Franklin County had 1,264,518 residents (Community Health Needs Assessment 2019). The number of children in the county ages five to nineteen years old was 19% of the population. The majority of residents were identified as white (67.6%), next were residents identified as African American (22.2%), Asian (5%), "some other race" 1.2% and two or more races (3.8%). Information about ethnicity was that 5.3% of Franklin County residents were identified as Hispanic or Latino of any race. A total of 11.8% of Franklin County residents have a disability with 4.6% being under the age of 18 years old. Grandparents as caregivers including children living with a grandparent is 6.1%, has gone up since the health map of 2016. In Franklin County they're higher percentages of both families and children living below 100% of the Federal poverty line than in Ohio or the United States. Also, 53.6% of children enrolled in school in Franklin County are eligible for free or reduced lunch, which is a higher percentage than Ohio overall. In Franklin County over 200,000 people or about 17% of the population live below the federal poverty level. In Franklin County 17.4% of residents are food insecure. According to the 2019 Franklin County health map food insecure households with children are 20.4%. These figures display the continued need for community interventions to reduce economic, racial, and health disparities within Franklin County.

There is an ever-growing body of research regarding the role of the natural environment in relation to children's development and health. Erik Erikson identified eight developmental stages, with adolescence (ages 12-18) being the fifth stage. During adolescence youth's ego identity begins to crystalize (Orenstein, 2020). Urie Bronfenbrenner identified five nested structures where development is profoundly affected by events occurring in settings both that the person occupies as well as environments they do not, such as a parents' workplace (Bronfenbrenner, 1979). The Centers for Disease Control and Prevention identified five social determinants of health: economic stability, education, social and community context, health and health care, and neighborhood and built environment. Adverse Childhood experiences (ACES) are potentially traumatic experiences that occur in childhood that can affect children negatively. Urbanization also plays a particular role in mental well-being, and Anette Chu created a preliminary model which explores the negative impact of the physical and urban environment on mental well-being. Research regarding the benefits of nature on mental health are growing and theories like Attention Restoration by Kaplan (1989) captures how humans experience restorative benefits form natural outdoor environments.

The current study focuses particularly on the developmental environment affecting youth in the Greater Hilltop neighborhood of Columbus Ohio, specifically marginalized youth access to outdoor spaces for recreation. Given the legacy of colonization, industrialization, defacto and dejure segregation, and their importance to the development of youth, I propose to explore what outdoor spaces for recreation there currently are and how each of Bronfenbrenner's systems affect access to those spaces. Ohio State University College of Social Work honors program afforded me the opportunity to complete a qualitative research study and code responses from

youth service providers in the Greater Hilltop neighborhood, and present findings in the following paper.

Chapter 2: Literature Review

Erikson's Developmental Theory

There are many popular human development theories that explain lifespan development and the themes that occur during each stage. Social work commonly utilizes the theories of social learning, systems, psychodynamic, social exchange, rational choice, and psychosocial development to understand individuals' development. In the 1950s Erik Erickson identified periods of psychosocial development. Erickson identified 8 stages that are influenced by biological, psychological, and social factors (Orenstein, 2020). Each stage of development needs to be negotiated successfully before moving onto the next. The stages are separated into three categories: childhood, adolescence, and adulthood. Two psychological "tendencies" (one positive and one negative) define an individual's ego. One could develop strengths or a maladaptive tendency from particular life stages (Orenstein, 2020). If a child takes on the positive (strength) from a developmental stage, it will help them have a stable foundation for relating to themselves and the outside world. If the maladaptive tendency is acquired during a stage, then it causes instability in development. Youth must navigate the opposing outcomes in each developmental stage and find balance, and not only strive for positive values. Orenstein states that becoming too focused on the positive value can be maladaptive and focusing on the negative can be malignant (Orenstein, 2020). Successful completion of the developmental stages from childhood to adolescence are, trust (infancy), autonomy (early childhood), initiative (play age), industry (school age), and identity (adolescence) - the final stage before adulthood stages begin (Orenstein, 2020). Adolescence, the fifth of eight stages, "crisis" is identity versus role confusion. The main task of this stage is developing a sense of self and personal identity (Block, 2011). Question's youth ask themselves during this time are "Who am I?", and "What do I want to do with my life?" (Raymond, 2021). During this stage youth explore various roles and ideas,

set goals, and attempt to discover their adult selves. Adolescence includes the ages twelve to eighteen; Healthy resolutions of earlier crises serve as a foundation for an adolescents' search for an identity of their own. Successful completion of this life stage will lead to the adolescent having the virtue of fidelity (Raymond, 2021). Fidelity is defined as being able to commit oneself to another on the basis of accepting others, even when there may be ideological differences (Raymond, 2021). Adolescents who complete this stage have a strong sense of identity and remain true to their beliefs and values when faced with challenges. Adolescents who are pressured to conform to their parents' ideas for their future, do not make a conscious search for identity, or are apathetic may develop a "weak sense of self" and experience role confusion (Raymond, 2021). These adolescents will likely be unsure of their identity and unsure about the future, and struggle to "find" themselves as adults. It is important to understand what general life skills and challenges adolescents experience in order to consider what youth may need to support their health and well-being.

Bronfenbrenner's Ecological Theory

Bronfenbrenner's ecological model explains how a developing individual is influenced and impacts their environment, and the structures that make up the environment (Bronfenbrenner 1979). Development is defined as lasting change that impacts a person's perception of their environment (Bronfenbrenner, 1979). Five structures create the ecological environment and are depicted by spheres that influence a child's development (developing person in center). From the inner most to outermost the structures are microsystems, mesosystems, exosystems, macrosystems, and chronosystems (Bronfenbrenner, 1979). This theoretical model identifies each structure individually and emphasizes how they are interrelated. The "interconnections can be as decisive for development as events taking place within a given setting", so it is important to

understand how they relate (Bronfenbrenner p. 3,1979). The microsystem, mesosystem and macrosystem tend to be "very much alike" within any culture or subculture settings but are "distinctly different" between cultures (Bronfenbrenner p. 3, 1979). Bronfenbrenner states that it as if there is a "blueprint for the organization of every type of setting", and the blueprint can be altered, which results in the structure of the settings in a society producing corresponding changes in behavior and development (Bronfenbrenner p. 3, 1979). Ultimately, this theory explains that what is important for behavior and development is "the environment as it is perceived rather than as it may exist in "objective" reality" (Bronfenbrenner p. 4, 1979).

The most proximate system, microsystem, is the immediate environment the developing child is influenced by and actively changes. The microsystem is defined as "patterns of activities, social roles, and interpersonal relations" experienced by the developing person in face-to-face settings (Bronfenbrenner pg. 40, 1994). Examples of the microsystem include school, family, peer-group, and workplace (Bronfenbrenner, 1994). The mesosystem is composed of the links between settings, ones the developing person is and is not present (Bronfenbrenner, 1979). Examples of the mesosystems are the relationships between home and school and school and workplace (Bronfenbrenner, 1994). The exosystem includes the links between and processes taking place between two or more settings, with at least one not containing the developing person (Bronfenbrenner, 1994). The settings the developing person may never enter but when events occur, they affect what happens in the developing persons immediate environment (Bronfenbrenner p. 7, 1979). Examples of the exosystem for a child are the relationship between home and parent's workplace (Bronfenbrenner, 1994). Sine the 1980's research has focused on three exosystems specifically, parent's workplace, family social networks and neighborhood and community contexts (Bronfenbrenner, 1994). Macrosystems are overarching patterns of micro-,

meso-, and exosystem ideology and organization of social institutions common to a particular culture of subculture (Bronfenbrenner p. 8, 1979). The final system, chronosystem, is change or consistency over time- not only in the characteristic of the person, but also the environment which the person lives. Examples of chronosystem are changes in family structure, socioeconomic status, employment, place of resident or the degree of hecticness and ability in everyday life (Bronfenbrenner p. 40, 1994). This ecological systems theory offers in-depth understanding of how the entire ecological environment is connected and interacts with the developing person. Below is an image of the ecological systems theory, which displays the developing individual in the center and the five nested systems that were previously identified.

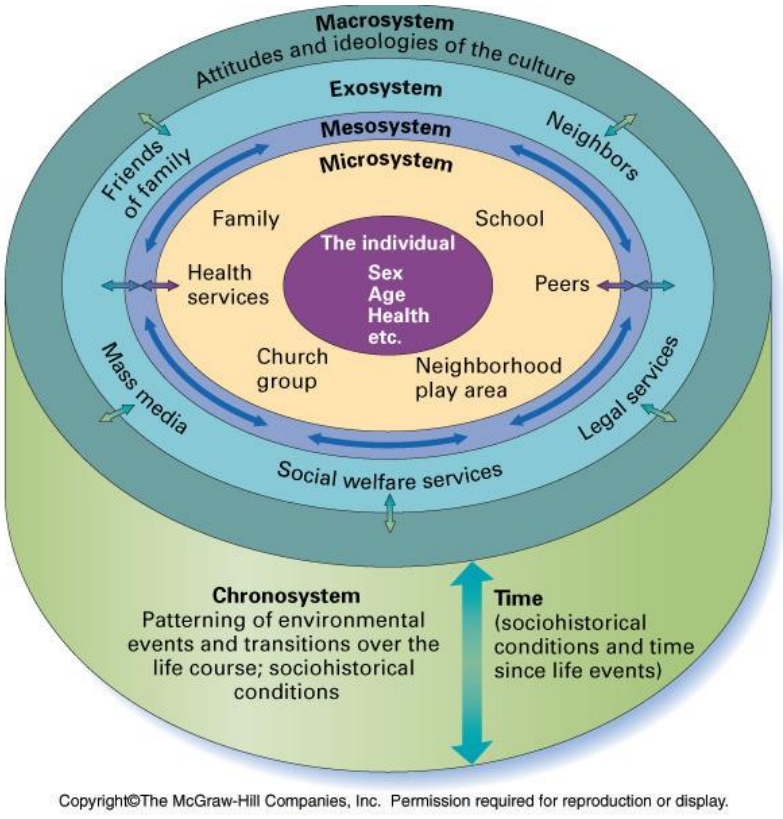

Figure 1: Bronfenbrenner's Ecological Systems Theory Model

Social Determinants of Health

Social determinants of health are conditions in the environment "people are born, work, play, worship, and age that affect a wide range of health functioning and quality-of-life outcomes and risks" (Social Determinants of Health 2021). The five key determinants are economic stability, education, social and community context, health and health care, and neighborhood and built environment. Settings and people that interact in them can have a major influence on health outcomes. Important resources children need access to are safe and affordable housing, education, public safety, healthy foods, local emergency/health services, and environments free of life-threatening toxins (2021). The social determinants of health offer a deeper insight into the systems Bronfenbrenner identified which adolescent development is impacted by every day. Since multiple factors influence an individual's health and development there are a multitude of ways professionals can intervene to mitigate the impacts of negative influences of adolescent health.

The City of Columbus commissioned a report titled *Renewing Our Call to Action* by the Kirwan Institute for the Study of Race and Ethnicity at Ohio State University. The report profiles information related to eliminating disparities for boys and men of color and improving outcomes for all youth in Columbus, OH. The Kirwan Institute conducted four analyses for the report, first Youth Vulnerability Index, then aggregated demographic data, youth service provider asset map, and a survey of existing youth service providers. The Kirwan Institute defines vulnerability as "the cumulative product of encountering environmental and interpersonal stressors" (Strickland, 2017). Youth exposure to stress compounds health problems and increases rates of heart disease, diabetes substance use and depression (Strickland, 2017). The Kirwan Institute created a map of youth vulnerability based on the 16 indicators. Multiple zip-codes in the Greater Hilltop census

tracks were highlighted as having very high, high and moderate vulnerability (Strickland, 2017). The census tracts indicate where youth experience the highest rates of multiple barriers and cumulative disadvantage (Strickland, 2017). Vulnerability was identified as highest in Linden, Hilltop, East Side, and South Side neighborhoods (Strickland, 2017). In Hilltop, nearly all census tracts experience very high health vulnerability. The concentrations of high and low vulnerability places on the vulnerability map display a contrast between centrally located neighborhoods and outlying suburbs (Strickland, 2017). The Kirwan Institute states that "this modern segregation illustrates how historic and modern policies of disinvestment manifest in vulnerability" in Columbus, Ohio (Strickland, p. 18 2017). The areas with the highest concentration of vulnerable youth in Columbus were identified and Hilltop is one of the neighborhoods represented. The information uncovered in this study is directly applicable to Bronfenbrenner's ecological systems theory and offers a clearer understanding of what youth in the Greater Hilltop community experience and how it differs from other Columbus neighborhoods.

ACES/ Protective Factors

Adverse child experiences (ACEs) are potentially traumatic events that occur in childhood (0-17years) (Risk and Protective Factors 2021). In 2019 the Centers for Disease Control and Prevention released a report that detailed six strategies to prevent ACEs: strengthen economic supports to families, promote social norms that protect against violence and adversity, ensure a strong start for children, teach skills, connect youth to caring adults and activities, and intervene to lessen immediate and long-term harms (2021). Community protective factors include access to economic help, medical and mental health services, safe and stable housing, nurturing and safe childcare, safe engaging after school programs and activities, adults work opportunities with family-friendly policies, strong partnerships between the community and businesses, health care,

government, and other sectors, residents feel connected to each other, and violence not being tolerated (2021).

Examples of ACEs include but are not limited to experiencing violence, abuse or neglect, witnessing violence in the home or community, and having a family member attempt or die by suicide. Some children "face further exposure to toxic stress from historical and ongoing traumas due to systemic racism or the impacts of multigenerational poverty resulting from limited educational and economic opportunities" (Preventing adverse childhood experiences 2021). Changes in the brain from toxic stress can affect things such as attention, impulsive behavior, decision-making, learning, emotion, and response to stress (2021). Varying risk and protective factors apply ACEs, although some are at the individual and family level, "no child or individual is at fault for the ACEs they experience" (2021). ACEs are linked to chronic health problems, mental illness, and substance misuse in adulthood and can also negatively impact education and job opportunities.

In one recent study of 450 adolescents from an urban academic pediatric practice found that one-fifth of adolescents (20.3%) reported exposure to four or more of the traditional ACEs (Hall, 2021). Participants were located in a high-risk urban area and were between 12.1 years to 18.9 years old, with the mean age being 14.9 years old (Hall, 2021). Approximately 55% of the sample participants were female, 72.5 % identified as African American, and 21.1% identified as Hispanic (Hall, 2021). Over one-third of adolescents (34.5%) had at least one poor health outcome; Obesity was the most prevalent outcome at 24.6% followed by depression at 12.6% (Hall, 2021). The researchers used a validated composite measure to find poor health, obesity, hypertension and depression. The resilience measure was separated into three categories: individual, relationship with caregiver and context subscales. Key findings of the study are that

higher ACE scores were associated with higher risk for negative health outcomes and higher resilience scores were associated with lower risk health outcomes (Hall, 2021). Also, ACEs and resilience have an inverse relationship and the on the subscale for resilience and relationship with a caregiver was found to be a primary driver of the protective nature of resilience (Hall, 2021). This study further affirms the association between ACES and poor health outcomes in adolescents. One key limitation was the generalizability to broader population may be limited because the population is "minority teens in an urban, low socioeconomic environment", however, this is important to be aware of as the population of concern for this research is marginalized youth in the Greater Hilltop neighborhood of Columbus, OH, which is considered to have high rates of youth vulnerability, like that of the researcher's population (Hall p. 6, 2021). The social determinants of health and ACEs offer more in-depth understanding of how different aspects of the ecological environment impact adolescent development. There are multiple factors that can have negative impacts on adolescent health outcomes however, some factors can be protective and support health and development.

Urbanization

According to the United Nations, sixty-eight percent of the world population is projected to live in urban areas by 2050 (United Nations, 2018). There are approximately 11.7 million residents in the state of Ohio and it's the seventh most populous state (Ohio State University Extension). Six cities in Ohio have populations of more than one-hundred thousand: Akron, Cincinnati, Columbus, Cleveland, Dayton, and Toledo (Ohio State University Extension). Urbanization is an increase in the number of cities in a country and increase in urban population. Rapid urbanization can threaten mental health and has negative impacts including unemployment, poverty, crime, pollution, and decay in aesthetic structure (Turan 2008).

In 2004, researchers created a preliminary framework to explain the relationship between mental well-being and the urban environment (Chu 2004). The model provides a framework for interventions that promote well-being and describes how the built environment impact mental-well-being (Chu, 2004). Five domains of the urban environment are identified by the model, control over internal home environment (noise, light, temperature, and humidity within home), home design and care quality, density and "escape facilities" (residential density, open spaces, natural settings) crime and fear of crime, and social participation (Chu 2004). The current research is specifically concerns escape facilities like open space, natural settings, for physical exercise, or gardening as they relate to urban adolescent mental well-being. Escape facilities must be of "sufficient size, quality of design and accessibility" if they are to be an effective buffer for high density living (Chu p. 24, 2004). Greater Hilltop areas youth service providers and are uniquely positioned to be possible access points for escape facilities in the urban environment like Chu's model discusses.

The domains of the model are confounded by socio-economic factors and may interact with cultural factors, housing type, and living context (urban, rural, suburban, affluent or under-resourced areas). The researchers stated that "the quality of the urban environment is often intrinsically linked to the socio-economic status of the area", which offers can be one explanation for researchers when observing differences between neighborhoods (Chu p. 27, 2004). The cultural factors that impact elements of the model can be understood differently based on what is considered normal behavior by the particular community, so it is important to be aware of the cultural context. Individuals living in what are considered poor neighborhoods can be more vulnerable to negative mental health outcomes as access to quality services, facilities and resources may be limited. Many factors could be associated with living in poor

environments and living with higher risk for mental health problems, so it is important to understand the urban environment one is considering and how other factors mitigate aspects of the environment, have no effect or have a positive effect. Aspects of the urban environment have been associated with feelings of loss of control, vulnerability, confusion, fear and anger, but it can equally promote social interaction, enjoyment of place, comfort and pride (Chu, 2004). The model aims to show how interconnected each domain is within the neighborhood context.

Figure two, shows, "Summary of the findings of the literature searches into the negative impact of the physical and urban environment on mental well-being" (Chu, 2004). The aforementioned model provides insight into the physical urban neighborhood environment and specific aspects that influence individuals' well-being. The authors of the model did not detail the process of how the urban environment promotes well-being; however, the impacts are relevant and are necessary to examine in order to understand what adolescents may be exposed to in the neighborhood environment.

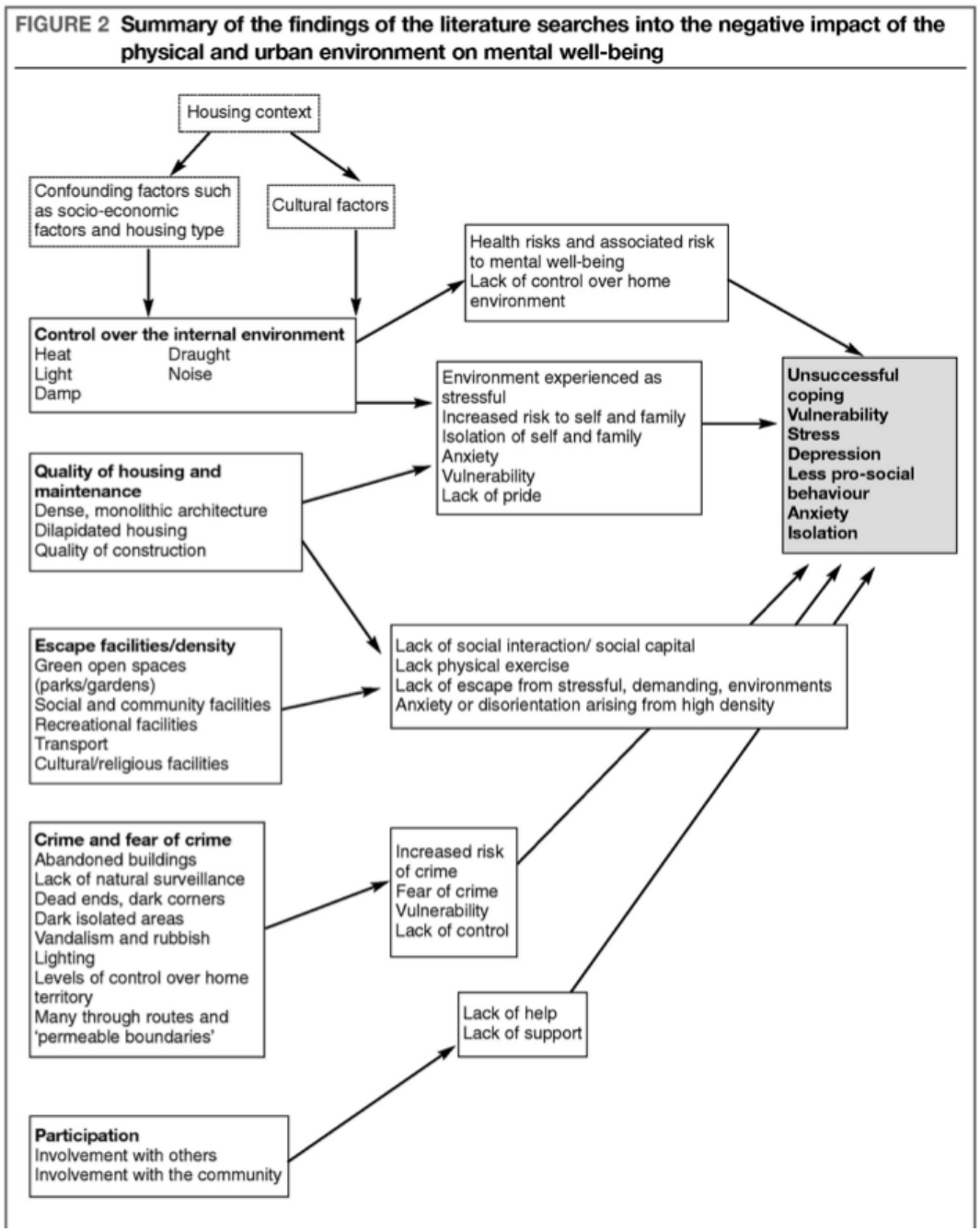

Figure 2: Summary of the findings of the literature searches into the negative impact of the physical and urban environment on mental well-being (Chu p. 28, 2004)

Attention Restoration

There are multiple theories that explain the relationship between humans and the natural environment. Two theories dominate the literature: stress reduction (Ulrich, 1983) and attention restoration (Kaplan 1995; Kaplan & Talbot, 1983). Directed attention plays a key role in functioning and impacts problem solving, inhibition and affect, perception, thought, action, and feelings (Kaplan 1995). Humans are often unaware of the fact that processing is occurring because evaluating information is essential to our functioning (Kaplan 1989). Fatigue related to directed attention is "a key ingredient in ineffectiveness and human effort" (Kaplan p. 172, 1995). Restorative environments or experiences are "opportunities to reduce the fatigue of directed attention" and offer four features: being away, fascination, extent, and combability (Kaplan 174, 1995). Attention restoration theory views nature as existing in many settings including but not limited to places where plants grow because humans deliberately did or in spite of where humans want plants to grow (Kaplan 1989).

To humans many perceived preferences are expressions of underlying needs that must be met (Kaplan, 1989). Preference often feels direct, immediate and holistic- the individual is not conscious of the complex, analytic process that is taking place (Kaplan, 1989). Children and adults find that natural settings are restorative, reduce cognitive fatigue, and enhance positive affect (Kaplan, 1989). Variations in preference related to group differences are not completely by happenstance. A major factor that accounts for preference is familiarity- a product of experience which comes in many forms (Kaplan, 1989). Familiarity is gained from circumstances like where someone lives, where one has visited or studied., and the cultural norms of one's group, however, is not a through predictor of preference (Kaplan 1989). Attention restoration theory gives insight into reasons why adolescents may engage with natural

outdoor spaces and how many of the choice's humans make are because a human need must be met.

In recent research, data was utilized from a longitudinal study that focused on contextual mechanisms of adolescent substance use. Recruitment occurred between 2012 and 2014, from an outpatient clinic for adolescent's medicine at a large medical institution in Richmond Virginia. Inclusion criteria was that youth be between 13 and 14 years old, registered patients at the clinic and live in the Richmond area. Ultimately 179 adolescent's data was used, with 89% identified as African American, 58% being girls, and 54% being 13 years old at the time of enrollment. Researchers used a Geographic Ecological Momentary Assessment (GEMA), which combines conventional EMA with Global Positioning Systems (GPS) and Geographic Information Systems (GIS) (Mennis, 2018). Ecological Momentary Assessment (EMA) is a data collection tool that repeatedly samples a participant's behavior, mood and experience in real time. Often times data is recorded in the participants natural environment through short surveys taken on a mobile device (Mennis 2018). Momentary data related to exposure to greenspace and psychological stress was collected in activity spaces in this sample of urban youth. Researchers found evidence to support that exposure to greenspace in activity space of urban adolescents is associated with lower psychological stress (Mennis 2018). The researchers speculate that greenspace being associated with lower stress could be related to stress reduction (Ulrich), attention restoration (Kaplan), or the improvement of mental capacity because of exposure to natural areas and vegetation (Mennis 2018). The aforementioned study is the first of its kinds to investigate greenspace exposure using momentary data through the GEMA method and highlights the potential value for similar methods to be utilized when researching the relationship between adolescents and natural outdoor spaces.

In a systemic review completed in 2018 researchers found that mental health outcomes and the type of nature interaction causes there to be varying findings related to nature and mental health. However, it can be argued that nature does have a beneficial influence on children's and teenager's mental health (Tillmann 2018). In a more recent systemic review researchers found evidence of the positive benefits of greenspace for adolescents, specifically, reduced stress, positive mood, less depressive symptoms better emotional well-being, improved mental health and behavior, and lower psychological distress" (Zhang 2020). A majority of the studies in the review showed a "statistically significant positive relationship between green space and mental health" which affirms previous research (Zhang 2020). Overall, the body of literature is limited, shows mixed results, and is dominated by cross-sectional studies, so there is opportunity for continued research (Zhang 2020). The review emphasized the need for more evidence on adolescents' perceptions, use of green space green space, affordances and how physical and psychological development explains choices that influence green space exposure and mental well-being (Zhang 2020). This is because researchers have found that not all green spaces are beneficial for adolescents and many benefits depend on the quality, and adolescents' perceptions are important if interventions are to be implemented related to green spaces and mental well-being.

The extensive literature on human development, including multiple theoretical perspectives that explain how the environment impacts health is crucial when conducting research on what adolescents in urban environments may experience. Erikson's theory of development profiles eight developmental challenges that build critical skills. In adolescence youth are grappling with developing identity versus role confusion; this, however, does not occur in a vacuum as Bronfenbrenner points out in his theory of ecological systems. The ecological systems theory

highlights the broad and complex environment that adolescents develop in and influence and its interconnectedness. Adolescents do not decide what environment they grow in, and those living in low-income environments are disproportionately impacted by factors that contribute to negative health outcomes as Chu and colleagues identified in 2004. The social determinants of health and adverse childhood experiences offer more information on specific community and individual risk and protective factors that influence adolescent development (2021). Literature from Kaplan (1989) on attention restoration gives an understanding of how the natural environment offers restoration to humans and how directed attention fatigue can negatively influence functioning. Growing evidence relates mental health and well-being to the natural outdoor environment in adolescents. Understanding the nuances of each neighborhood via the perspective of community educators and service providers involved with adolescents is of utmost importance, including in Columbus, Ohio.

Chapter 3: Methodology

Sample and Procedure

A convenience sample was conducted utilizing a contact list of 38 agencies and schools in the Greater Hilltop area from The Ohio State University College of Social Work. Due to time constraints and preliminary research, I selected seven organizations to contact (four from the list and three via web search of youth service providers in the zip codes 43223 and 43222). Four organizations responded to the initial inquiry email and indicated availability to participate in interviews; one respondent represents two schools. The researcher sent a synopsis of the research aims and a request to meet with representatives of the organizations. All representatives confirmed ability and interest in participating in research interviews. One, hour–long semi-structured interview was held with one representative from each organization. Interviews were conducted via Zoom online meeting platform, screen-recorded and automatically transcribed. Hand-written notes were also taken during sessions. Interviews were preceded by a preliminary meeting between the researcher and each interviewee to establish rapport and gain understanding of their program and role. Each interview began with an introduction, statement of purpose, overview of the ecological model, and four interview questions: (1) How do you see the environment affecting your students? – such as this space (school or program), their homes, natural space they have access to, their communities? (2) What program or efforts does your organization support to foster positive relationships between the youth and their environment? (3a) How does the community support a positive relationship between youth and their environment? (3b) How could the community support a positive relationship between youth and their environment? And (4) Is there anything else I should know about this topic?

Following the completion of the interview questions the researcher ended the meeting recording and closed the session.

Population

The population for this research was chosen via convince sampling due to the onset of the SARS-COVID-19 Pandemic in February 2020 which caused the Centers for Disease Control and Prevention to recommend the immediate ceasing of interstate travel, the closing of schools, businesses, and public institutions. The pandemic limited the researcher's ability to survey youth directly, with constraints existing due to timeframe, receiving parent and/or guardian consent and assent for youth to participate in research study, and Institutional Review Board process. Thus, the researcher chose to interview representatives of organizations serving adolescents in the Greater Hilltop community. The organizations interviewed included: Highland Youth Garden, Franklinton Farms, Gladden Community House, and a representative from Capital & Central High Schools.

As mentioned previously, the Kirwan Institute for the Study of Race and Ethnicity created a map of youth vulnerability for Columbus, OH in 2017. The majority of the census tracts in the Greater Hilltop neighborhood were characterized as predominantly White except for in the Lincoln Park-West and Georgian Heights area located near the end of Sullivant Avenue (the main throughfare that crosses Hilltop neighborhood) where the predominant race is Black (Strickland, p. 11 2017). The majority of census tracts in the Hilltop neighborhood were identified as having very high, high and moderate vulnerability (Strickland, 2017) in the four domains of education, economics, health, and safety. Key findings from the study revealed that that high school graduation rates were 21% lower between very high vulnerability neighborhoods (73%) and very low vulnerability neighborhoods (94%; Strickland, 2017, p. 24).

In regard to economics, in very high vulnerability neighborhoods the youth poverty rate was 60%, compared to 8% in very low vulnerability neighborhoods (Strickland p. 26 2017). Also, for health, there was an 8-year difference in the life expectancy at birth of very low (80 years) and very high vulnerability (72 years) neighborhoods (Strickland, 2017; p. 28). In the domain of safety there is a nearly 15-point difference in violent crime rates of very low and very high vulnerability neighborhoods, 1.7 (per 1,000) in very low vulnerability neighborhoods compared to 16.1 incidences (per 1,000) in very high vulnerability neighborhoods (Strickland, 2017; p. 29). The information the Kirwan institute gathered is crucial to understanding some of the current disparities that exist between communities in Columbus, OH and what neighborhoods need support in order for their youth to be able to successfully reach their developmental milestones.

Measures

Interview Questions were drafted prior to interviews and finalized with four questions to ask participants. The structured questions reflected the scope, timeframe, and goals of interviews. The researcher re-watched video interviews and read interview transcript of respondent answers.

Analytic Method

In order to understand the results of the interview sessions the researcher coded responses to each of the four questions into Bronfenbrenner's (1979) ecological model. The operationalization of the five domains of Bronfenbrenner's model utilized the definitions and examples of recent research by Ashiabi (2015), the American Psychological Association, and Bronfenbrenner (1979). After defining and operationalizing each of the five domains (see Table 1), the researcher coded the interviewees' responses to each question into the five domains. The researcher reviewed the coding process and decisions with an experienced researcher, thereby increasing trustworthiness of the data.

Table 1: Bronfenbrenner's Ecological Systems Theory Operationalized

Bronfenbrenner's Ecological Systems	Chronosystem	Macrosystem	Exosystem	Mesosystem	Microsysyetm
Definition	Changes and continuities occurring over time that influence an individual.	Sociocultural values and characteristics of the larger society.	Indirect effect on an individual and are settings in which the individual does not actively participate.	Interrelationships between different microsystems.	The immediate environment in which the child lives.
Operationalization	Normative life transitions (e.g., school entry, marriage, retirement), nonnormative life transitions (e.g., divorce, winning the lottery, relocation)	Economic conditions and material resources.	The government, legal system, media, parents' workplace, and social welfare services.	Parental involvement in children's schooling, day care, as well as a child's peer group.	Any immediate relation-ships or organizations the child interacts with, such as, the family, peer group, school setting, and neighborhood.

Chapter 4: Results

Interview transcripts were coded dividing responses to each question into each of the five systems of the ecological systems theory - chronosystem, macrosystem, exosystem, mesosystem and microsystems. Each organization that was interviewed differed in their location, services offered, and youth opportunities to experience outdoor spaces for recreation in their neighborhood environment. The usefulness of reaching out to multiple organization types was shown in the results even though the researcher was limited in the number of organizations they could contact, which will be further discussed in the limitations section of this research thesis. Figure three displays where each organization is located geographically in the Greater Hilltop area of Columbus, Ohio. Table 2 gives a detailed understanding of the organization interviewed, the background of the representative, the services they offer in the greater Hilltop community and how they were impacted by COVID-19.

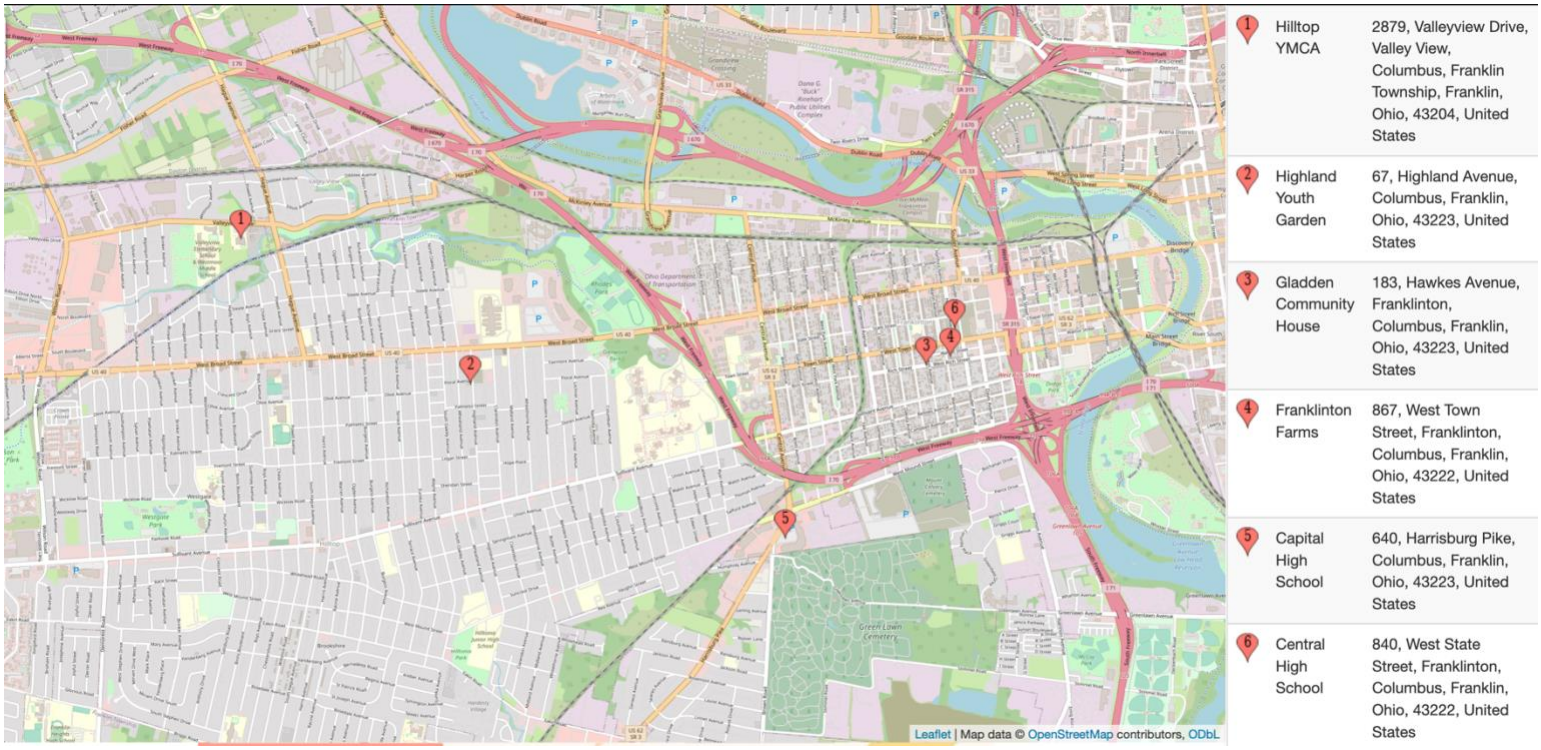

Figure 3: Map of Greater Hilltop Organizations Contacted.

Table 2
Organization Descriptions

Organization	Representative	Description	Adolescent Programming	COVID-19 Impact
Highland Youth Garden	Katie Carey, Lead Educator	Non-profit youth garden on the West side of Columbus located in Hilltop. Programming is specifically focused on pre-K through 12th grade. Focuses on gardening, nutrition, and community skills. Works with over 350 students from both partner schools annually.	Garden club takes place after school. Green Teens program is an 8-week opportunity for youth to build skills and be paid for working in the garden. Garden Markets run twice a week; Youth participate by distributing produce and assisting with running event.	After school garden club moved indoors, and reduced group size. No classroom visits. Adapted programming to focus on increasing access to fresh foods in neighborhood. Distributed 30-50 activity packs to youth during growing season. Green Teens programs ran with staggered participants.
Hilltop YMCA	LaToyia Mosley, Youth Development Experience Leader	Branch of the YMCA of Central Ohio located in Hilltop across from Westmoor Middle School. Programming focuses on youth development, healthy living, and social responsibility. The YMCA offers a variety of preschool, childcare, Head Start, camping, youth development & leadership, and wellness programs.	After school program offered year-round. Teen Leaders programs (service learning). Summer Day camp for grades 1-10. Hilltop YMCA has a garden on property; youth participate in programming run by master gardeners. YMCA has multiple programs related to water, sports, service and skill building for adolescents.	Hilltop Branch of YMCA became a community hub where youth could access technology, and homework help during the pandemic. YMCA was a food distribution site in community during the pandemic with items provided from the Mid-Ohio Food Bank.
Gladden Community House	Dan Moehrman, Team Sports Director	A settlement house located in Franklinton near the west side of Columbus, OH. Offers a broad range of social services to individuals, families and groups. Gladden has a preschool for youth ages 3-5 years old. After school and summer programming with nutritional support, and year-round team sports programming for youth ages 5-18 years old.	Youth team sports take place March-November. Participants play sports. Gladden community house provides a multitude of programs and services for youth, adults and seniors related to supporting with food, housing, and other social services.	Team travel and competition shut down for 6 weeks. Received approval for outside sports. A smaller number of teams could participate. No other teams in basketball season; transitioned to team clinics. Limit to1 parent per child. Engagement increased in some areas, decreased in others

Franklinton Farms	Molly Jo Stanley, Education Coordinator	Situated predominantly in central Franklinton between Sullivant and Broad Street. Just under 2 acres of scattered sites including the learning garden- located on Hawkes and Town street, across from Avondale elementary school and Gladden community house. Works with neighbors and community partners to build farm and local food system that improves food security, provides economic opportunity, and supports healthy futures.	Summer day camp for youth ages 3-12 years old. Provide co-teaching with classrooms. Developing program for adolescents ages 14-20 years old with paid apprenticeships and skill building.	Unable to serve youth in schools during pandemic. Virtual schooling made serving local elementary students different. Understanding the impact of the pandemic is a long-term process, and programming is adapting.
Capital & Central High School(s)	Dr. Emby Miller, Career Tech Regional Coordinator	Provides an alternative graduation path for students who are at risk through dropout intervention services, including utilizing technology to promote self-paced education. Goal is for student to earn their state-recognized high school diploma, in non-traditional school environment. Serves youth grades 9-12.	Serves approximately 100 students at each high school. School does not offer sports but offers volunteer opportunities for students to be involved in community and have opportunity to earn service hours.	School shut down because of pandemic and transitioned to hybrid and online courses. Program has to be creative in ways to engage youth. Utilized online meetings via zoom to continue to build community and support senior students. Since shut down schools allow students back for training on alternating days.

Table 3 below presents the codes for each organization using the ecological model coding system. All interviews provided evidence for all but one system influencing health, which was the chronosystem. The most common system that was identified as impacting adolescent health was the mesosystem. For example, Organization B stated, “We have a limited understanding of their school and home environment because we work in the out of school space, but we can speak to the immediate environment surrounding our organization.” This sentiment is reflective of similar statements other respondents made. All organizations interviewed except one, interacts with adolescents outside of school, which limits their knowledge of the microsystem (most proximal) environment. Organization C stated, that since they’re a “non-traditional school setting, so it limits [their] capacity to do programming or activities outside. Organization C is unique as a representative of a non-traditional school setting, which explains why their responses differed from the other interviewees, as they provide supplemental services for youth and families in the out of school setting. Organization C discussed how they are limited in their capacity to provide access to natural outdoor spaces due to their physical location, which reflects how adolescents are dependent and can only access what exists in their ecological environment. Interview responses that reflected the macrosystem is in a position that influences what youth’s surrounding culture may reflect. Organization D stated, "Care for nature is instilled in the garden as well as connection to the natural world;” this statement displays how social and cultural values are imparted to youth directly and indirectly through micro-system activities and meso-system community organization values. Although the macrosystem is not directly tangible to adolescents, it can and does still impact adolescents.

Less commonly coded were statements referring to the exosystem and chronosystem. Chronosystem was not captured in any interview responses. The researcher believes that the

absence of the chronosystem could be due to the fact that the interview subjects were not asked about their knowledge of specific life transitions that adolescents may be experiencing at their organization, like becoming an older sibling, parents' divorce or separation, or graduating. The exosystem was represented by most organizations and displayed that even though there are spaces that developing adolescents are not directly involved in they are still impacted, whether that be positively, negatively, or no measured impact. Organization E stated that there is an "abundance of Metroparks and green spaces, but it's clear in Franklinton and Hilltop how there's less access to that." This statement reflects the impact of the exosystem because decisions that are being made in other spaces related to greenspaces impact the adolescents of the Greater Hilltop community based on if they are unable to access it, have difficulty or don't have opportunities to access those spaces,

Complicating the coding process was the potential for one environment to be described in a manner that reflected multiple systems of influence. For example, Organization A stated that "The whole family is involved … and watch their kids participate." The researcher categorized this response as a reflection of the microsystem, however in some instances the whole family unit including aunts and uncles could be identified as the mesosystem as not all family members are in the adolescent's microsystem environment. Another example of this is when Organization E referred to neighborhoods in a way that reflected the exosystem as the interviewee described environments that Hilltop youth rarely accessed. It could have also been coded as the macrosystem, but since the environments were not referred to as a community value the latter was deemed a more accurate categorization. The qualitative interview method offered the researcher the opportunity to understand what specific system was being referred to as they could draw on the context of the full interview transcript.

Table 3.
Interviewee quotes illustrating ecological system codes

Organization A	**Representative Quotes illustrating Bronfenbrenner's Ecological Systems**
Question 1: How do you see the environment affecting your students? – such as this space (school), their homes, natural space they have access to, their communities?	**Mesosystem**: The school spaces nearby are available to youth including basketball courts as long as the weather is decent; There's also a small park that is easily accessible for outdoor space. Nearby school allows youth to use their space during nights and weekends.
Question 2: What program or efforts does your organization support to foster positive relationships between the youth and their environment?	**Mesosystem**: Programs serve youth ages 5-18years old and preschool programming until the age of four. Parent feedback includes kids like doing something physically rather than being indoors as a primary option. Parents also express being appreciative of youth getting out of the house and do something positive. **Microsystem**: During the year between March and November youth participate in sports programming. Youth are on the field interacting with each other as well as other kids in their environment. For some reason a lot of families that move in and out, so the stability of youth staying in the neighborhood has changed, there's kind of a revolving door where people come in and out, so new children join every year.
Question3a: How does the community support a positive relationship between youth and their environment?	**Mesosystem**: Gladden community house and other non-profit organizations offer youth opportunities for low-cost or free programs to get involved with. **Microsystem**: Parents, guardians and families of youth encourage them to play outside, come to programming, and cheer them on while they are participating, so there is family and community support for youth being active and involved.
Question 3b: How could the community support a positive relationship between youth and their environment?	**Mesosystem**: Community has limitations from a financial perspective, as an underserved community, the help needs to come from outside to maintain programming whether that's a foundation, government dollars, or philanthropist. There could be direct funding streams created for the programming to ensure it remains something youth in the community have access to. We fundraise, however there are challenges with receiving consistent funding beyond a year, which makes planning long-term more difficult.
Question 4: Is there anything else I should know about this topic?	**Mesosystem**: Sports and recreational opportunities have a tremendous impact because on youth. As an organization we are closely involved in the community and outreach is tremendous. Parents may be more comfortable putting their child in an afterschool activity or sport, where they may not be comfortable doing something like going to a counseling session. We are able to direct parents, families and community members to services when they're struggling so they can get additional help.

	Microsystem: The whole family is involved from grandma and grandpa to aunts and uncles, all laughing and enjoying watching their kids participate, so it really does impact not just the youth but their family.
Organization B	**Representative Quotes illustrating Bronfenbrenner's Ecological Systems**
Question 1: How do you see the environment affecting your students? – such as this space (school), their homes, natural space they have access to, their communities?	**Macrosystem**: If youth are taught dirt equals dirty and not dirt equals where food is cultivated, it could put a distance with the natural environment and put a chasm between how youth relate to outside, trees, nature, insects, and dirt- those things might be put in a negative category. If youth live in a community that values being outdoors and had community response to being outdoors as an approach it could be a way to keep youth in positive activities When we take youth outside for activities it's usually for mental reset and positive affirmation, we make being outside rewarding. The environment allows youth to be more free. Outside is seen as dangerous, so being indoors is a better option- which could be a reason why there's not a lot of joy associated with going outside **Mesosystem**: We have a limited understanding of their school and home environment because we work in the out of school space, but we can speak to the immediate environment surrounding our organization. The schools nearest to our property have access to our properties grass. The natural spaces they utilize aren't actually a part of the school- it's almost like alone **Microsystem**: The school nearest to our building is a bit outdated, due to weather conditions, building age and limited renovation, so that may have a somewhat negative impact on how students feel. Many schools have hybrid blacktop and grassy spaces, but overall, it's mostly asphalt. In city schools the more grass there is the more likely fun memories. Asphalt limits the amount of connection students have ton nature and since most items are artificial from milch or plastic equipment youth experiences outside may be different. When youth go into the natural spaces it's almost like a brand-new experience for some; it can be burdensome because it may be out of the ordinary, but there's also a captivating element when we add learning with what they're experiencing.
Question 2: What program or efforts does your organization support to foster positive relationships between the youth and their environment?	**Macrosystem**: We know it's important for mental health for students to utilize all their energy in a safe outdoor space, and at day camp we make it fun too. Helping students acknowledge that where they play matters **Exosystem**: People treat individuals, whether good or bad, different if your neighborhood has a particular aesthetic. Some people may approach from a different perspective and have a different experience of neighborhood environments. **Mesosystem**: Our organization offers programming related to building positive relationship with nature through safety and educational approach. In addition to sports programming, youth learn about native plants, and we help them understand their relationship with food through healthy living and social responsibility. Master gardener volunteers facilitate programming in the pre-established garden that's in back area on weekly basis. Students have

	various relationships from educational trips to grocery store. Summer camp is offered exclusively outside when we can in a safe manner. The middle and high school age students engage in volunteerism and connect with community.
Question3a: How does the community support a positive relationship between youth and their environment?	**Microsystem**: Older adults and parents volunteer from the community consistently which is important for youth to have role models. **Mesosystem**: Produce giveaways are a direct service from mid-Ohio food bank where families receive produce on a monthly basis. Youth in our program have opted to help give away produce and even stay later in the day.
Question 3b: How could the community support a positive relationship between youth and their environment?	**Mesosystem**: For whatever reason many more people opt out of helping volunteer than that do volunteer with youth. There's an age gap between the volunteers and our youth and are interested in how 20/30-year-old individuals that are making decisions about home ownership and employment can become mentors in a non-family context.
Question 4: Is there anything else I should know about this topic?	**Macrosystem**: Young people need to learn about themselves about how they can impact the world. There is opportunity to empower youth through growing food and being in outdoor settings like gardening. Not all organizations have specified space or programming for age group of 11-17 years old and even youth up to 21 years old. Ensure no financial barrier for youth programs to thrive. **Exosystem**: Financial support is needed because oftentimes programs run on bare minimum profit margins and have difficulty paying enough professional staff to be able to facilitate youth development programming. Continue to encourage financial entities to create long-term initiatives for centers for young people to build auxiliary skills and have time for recreation and leisure in safe and healthy settings.
Organization C	**Representative Quotes illustrating Bronfenbrenner's Ecological Systems**
Question 1: How do you see the environment affecting your students? – such as this space (school), their homes, natural space they have access to, their communities?	**Mesosystem**: Many youths may come from high poverty and stress environments with low life expectancy. All of those things impact youth performance in school, at home and when navigating their future. School is an established place where youth can build trusting and positive relationship with their environment and making decisions for themselves. **Microsystem**: The neighborhood environment and city hugely impact students school performance, attendance and home life, so oftentimes those environmental factors impact students. Many youths aren't sure what they are going to do, and our program gives them an opportunity to move forward with their lives, make good decisions for themselves and build personal and professional supports.
Question 2: What program or efforts does your organization support to foster positive relationships between the youth and their environment?	**Mesosystem**: Our organization is not in a traditional school setting, so it limits out capacity to do programming or activities outside, however we have multiuse spaces indoors which have potential for creative adaptations. **Microsystem**: Community service offers youth an opportunity to do group and individual service in order to give back to community, gain service hours, and learn from their experience. There lies potential to see how students work benefits and impacts the environment.

Question3a: How does the community support a positive relationship between youth and their environment?	**Microsystem**: When I drive around the community, I see community gardens, multiple greenhouses. I see that people value green space and they really value what they can do in their community to create some type of equity. Within the immediate radius of our organization there is one store however it is hard to get to without a vehicle. Harder. There are more food distribution opportunities, so food insecurity looks different and may not be as densely packed, but the need is still great in the community.
Question 3b: How could the community support a positive relationship between youth and their environment?	**Mesosystem**: Franklinton has been increasingly gentrified, so communities that have not been moved out could benefit from beautification efforts, investment in home improvement, and access to opportunities for residents. The community could also continue to receive investment from the city and other organizations to continue supporting communities that are in need.
Question 4: Is there anything else I should know about this topic?	**Macrosystem**: How youth spend their time in their environments is an important inquiry that applies to the time we are living in right now. With the pandemic, quarantine, and racial justice events, many youth dropped off from school during that time and schools continue to be unaware of where students are and what their well-being status is, unless they hear unfortunate news. Educators, parents, and other professionals need to continue to assess youth strengths and protective factors in order to mitigate the challenges they are experiencing. The events of the year were a double whammy to our youth – their involvement in the protests and not being in school and having caring adults to speak with. Youth are traumatized and many still don't know what they are going to do moving forward to cope with the events and exist as young people.
Organization D	**Representative Quotes illustrating Bronfenbrenner's Ecological Systems**
Question 1: How do you see the environment affecting your students? – such as this space (school), their homes, natural space they have access to, their communities?	**Macrosystem**: Care for nature is instilled in the garden as well as connection to the natural world. The perceptions youth have of the outside, soil, insects, and vegetables change from not preferring things they may be unfamiliar with to being enthusiastic and preferring vegetables, being in nature, and learn and recognize more aspects of their environment. **Exosystem**: How other people treat the environment impacts how they are interested in treating the environment – like care for nature. The Surrounding the neighborhood has violence in different forms including but not limited to prostitution and solicitation, stolen items, drug deals, and physically violent SWAT raids. **Mesosystem**: Neighbors are supportive including staff, which offers a supportive environment for youth to experience. At our organization students see food grown in their environment and participate in growing food themselves, which is exciting, allows them to feel connected to the environment and impacts what they're eating. Parents speak about how their kids help them pick out food in the garden market and are really helping lead mealtime. **Microsystem**: The environment impacts youth in both negative and positive ways. Youth we work with are impacted by trauma, so trauma carries over into the classroom, garden, and personal interactions. Students are able to physically pull vegetables out of the ground and try new things during their time and guide their own choices. The garden offers a safe haven in many ways for young people.

Question 2: What program or efforts does your organization support to foster positive relationships between the youth and their environment?	**Macrosystem**: Our organization focuses programming on learning, education and place-based framework. Students work in garden and interact positively with their environment. We empower youth not only through working with their hands but leadership, agency over their environment, over their experiences, how they interact with each other and how they interact with their community and give them a foundation to learn safely **Mesosystem**: Afterschool garden club students are directly in garden there are also school programs inside classrooms. Teens program for eight weeks during the summer students work approximately 20 hours a week and are compensated and build skills for farming and life. Garden markets twice a week during the growing season (March-mid-October) and oftentimes youth are running the booths. **Microsystem**: Youth take what's available to them and use it to their advantage to build something beautiful and delicious. Youth interact with community members who are getting free and fresh produce so that's a big way we see direct impact on our community when working in their environment
Question3a: How does the community support a positive relationship between youth and their environment?	**Exosystem**: There are a variety of parks are recreation services in Columbus, OH, however the distribution of those opportunities differs with what they have the capacity to offer and how accessible they are. **Mesosystem**: People are excited about the opportunity to get students to get involved in gardening and for them to get outside in general. There is encouragement from neighbors and families that live close for kids to play outside.
Question 3b: How could the community support a positive relationship between youth and their environment?	**Exosystem**: Students in suburban areas in Columbus frequently get opportunities to visit farms, Metroparks, or do programming. **Macrosystem**: There could be more nature based outdoor opportunities. Not a misplaced value of the community so much as lack of opportunity because of financial inequality. Generally, there is a lack of resources, not in the community's power. A lot of the environmental struggles are a result of trauma and not lack of effort.
Question 4: Is there anything else I should know about this topic?	**Mesosystem**: Our organization began a family gardening project which mentors families and delivers raised bed and materials to their home. **Microsystem**: The resourcefulness and ingenuity of community members lends itself to gardening and urban farming as a hobby, source of social justice and section
Organization E	**Representative Quotes illustrating Bronfenbrenner's Ecological Systems**
Question 1: How do you see the environment affecting your students? – such as this space (school), their homes, natural space they have access to, their communities?	**Exosystem**: There is an abundance of Metroparks and green spaces, but it's clear in Franklinton and Hilltop how there's less access to that and a disparity in access to green spaces in these neighborhoods- especially planned green spaces that are designed for children to play, grow, and recreate in the outdoors. **Mesosystem**: The nearby school and organizations come to the learning gardens and participate in education, planting, harvesting and a variety of other garden activities. Many parents express that when they grew up, they played outside, but now they don't feel safe letting their children play outside all of the time, so they prefer to keep their children indoors. Based on feedback from children, teachers, and parents we see significant improvement to their lives and are working on getting data related to program goals and outcomes with measures.

	Microsystem: The garden may be students' first opportunity to run, be free, and have a space that's available to experience wild play, move their bodies, and explore the world around them. Youth may be nervous during their very first visit and a little afraid of spiders, bees, and soil, but that quickly changes. A lot of youth don't have access to outdoor spaces for recreation that others grow up taking for granted being able to walk outside and play in the nearby yard or park.
Question 2: What program or efforts does your organization support to foster positive relationships between the youth and their environment?	**Macrosystem**: Emphasis on inquiry and play, giving youth opportunity to have fun. The relationship with nature is an inherent part of our humanity, and our culture has lost that, and the current state of society hasn't allowed people to reconnect with that fully. **Mesosystem**: Our organization works in tandem with schools to support academic achievement and support learning outside and implementation of school gardens. Educational programming through learning garden and affiliate partners. Preschool programming weekly to enrich youth. There is also summer camp offered through community partner that visits gardens as part of their programming. First year launching middle & high school programming through apprenticeship that is 8-week program for 14–20-year old's as a paid opportunity including – resume building, speakers, and other aspects. **Microsystem**: Some people may lack the capacity to cook, whether its access to a functioning kitchen, and all the equipment needed to prepare food, so our education and demonstrations are really simple and accessible for people to easily implement in their daily lives, and make eating fresh produce safe, fun, and nourishing.
Question3a: How does the community support a positive relationship between youth and their environment?	**Mesosystem**: A community that nurtures these opportunities and sets up space for community gardens and wild play, and pollinators. If we give children, the opportunity to be outside the rest follows. Giving them opportunities to be who they inherently are allows for them to develop in the way that best suits their expression,
Question 3b: How could the community support a positive relationship between youth and their environment?	**Mesosystem**: The community could continue to support organizations and more large-scale efforts to really re-orient youth with the natural world and the importance of their involvement with it for their own well-being but also that of the environment and creating sustainability. **Microsystem**: There are many people that are doing work related to youth development, food systems, outdoor spaces, and creating equity, so continuing to center the voices of community members is important as well as specifically reaching out to schools and understanding each of the settings and resources they have access to.
Question 4: Is there anything else I should know about this topic?	**Microsystem**: As a community it's important to gather like-minded people that care about getting youth involved in outdoor spaces whether its gardening, farming, or other types of programming and opportunities. Professionals, families, and youth can strengthen shared visions by communicating best practices, creating stronger partnerships and networks, and truly centering the youth voice and people living in the community.

Chapter 5: Conclusion

Summary of Findings

Over the course of this qualitative research study, the researcher sought to explore what outdoor spaces for recreation currently exist in the Greater Hilltop community, what systems may impact adolescent access to those spaces, and how youth serving organizations currently administer programming related to the natural outdoor environment. The researcher's use of semi-structured interviews yielded responses related to each of the five domains Bronfenbrenner identifies in the ecological model.

All of the respondents identified multiple ways that the environment affects the student with whom they work, most of which could be categorized as part of the mesosystem followed by macro then microsystems. Each organization gave a response related to how their services and others that serve youth within the mesosystem provide opportunities for safe recreation within the community and nearby local schools like sports, gardening, volunteer opportunities, and access to fresh foods. The respondents identified that the macrosystem's perspective (culture), including people that do not live in the greater hilltop community, can affect children's development in relation to how their view their environment compared to others. The microsystem affects youth in both negative and positive ways. The negative environmental factors include vacant lots and buildings, crime inducing drug deals, prostitution, and police raids. The microsystem environment was identified as a place that is sometimes safe but other times not for youth in the Greater hilltop community.

Related to how organizations foster a positive relationship between youth and their environment, the mesosystem was the most identified system based off respondents' answers. The mesosystem was identified as having opportunities for youth to be involved in that are free

and or low-cost in the Greater Hilltop Community. The macrosystem responses included discussion related to how programming impacts youth mental health, education, and understanding of the place they grow up in. Microsystem responses included explanations of the specific programs, activities and experiences youth have while in programs during the schoolyear and throughout the summer. Programming ranges in goals, however, they all focus on getting youth outside, increasing learning opportunities, and fostering positive youth development. One organization does not provide programming related to recreational activities; however, they engage their student in volunteer efforts in the community and have potential for implementing programming related to positive development in the school environment. The exosystem was identified once, in relation to how people outside of the community perceive and may view the community and its members.

The researcher also inquired about how the community currently supports youth relationship with their environment and what the respondents perceive as potential needs related to natural outdoor spaces for recreation. The majority of respondents gave answers related to the meso and microsystems. Responses included the need to support current community efforts led by organizations in order to improve the access youth have to outdoor spaces for recreation and activities that encourage positive youth development in natural spaces. Responses also included how access of parks and recreational services is distributed in the city of Columbus and how gentrification currently threatens to displace under- resourced communities in Columbus, OH in relation to the exosystem. The microsystem responses included continuing community efforts like produce giveaways, urban farms, free opportunities of youth and how parents and community members currently encourage children to be engaged in activities related to outdoor recreation and positive development in their community.

When asked if the interviewees had any final thoughts related to the topic, the majority of responses were related to the macro and mesosystems. Interviewees identified how culture shapes youth development including how historical and systemic inequality influences and contributes to the traumatic events that occur in the neighborhood environment. Respondents also discussed how the COVID-19 pandemic and racial uprising of the spring of 2020 impacts the youth they directly work with and how they were able to provide and assess effectiveness of programming. All organizations underwent a period of program shutdown and changed the way they provided services to youth. The exosystem was also mentioned again in relation to how financial support for outdoor recreational activities in the Greater Hilltop community is needed, and that entities outside of the neighborhood need to contribute to the increase in opportunities and long-term initiatives for physical spaces, programming and opportunities for youth to have access to outdoor spaces for recreation in their neighborhood.

Altogether, responses from interviewees were related primarily to the meso and microsystems. All responses displayed the interconnectedness of each of Bronfenbrenner's (1979) ecological systems as youth develop. Respondents affirmed the worth in investigating how outdoor spaces for recreation in the neighborhood setting impacts adolescent development. Chu (2004) created a preliminary model to describe ways in which the built environment impacts mental wellbeing. The themes appeared throughout the interview responses and offer a closer look at the microsystem environment and what factors contribute to neighborhood environment and adolescent development. The goal of the Chu model was to show the interconnectedness of different aspects of the neighborhood environment and lends itself well to being included with the Bronfenbrenner (1779) ecological model.

Limitations

Limitations of this research include the researcher's use of convenience sampling. The convenience sample indicates that programs were not selected randomly, and others were left out at the discretion of the researcher. A convenience sample was utilized due to time constrains related to the researchers change of methods when formulating research.

The researcher initially intended to interview youth, but due to COVID-19 pandemic and Institutional Review Board approval timeline, the researcher adapted methodology.

A limitation of the guiding theoretical framework, Bronfenbrenner's ecological systems theory (1979), is that the model is so broad, that is difficult to capture a complete understanding of each system and how they impact youth development in an interview style. Incorporation of Erikson's developmental stages and Chu's model helped to focus the researcher's work within the ecological systems theory. Future research may navigate this challenge by utilizing interview questions that ask about each domain in order to capture interviewees' perspective. Another limitation of this research is that no site visits were conducted. The aforementioned limitations would have provided a more detailed understanding of each program site and the outdoor space they have for adolescent recreation.

Recommendations

Organizations represented in the current study, including one school and four non-profit organizations, offered different perspectives on the importance of natural spaces to adolescent health. Together they provide a beginning understanding of access to outdoor spaces for recreation available for adolescents to utilize in the greater Hilltop neighborhood. Study findings lead the student researcher to offer several recommendations for future investigation. More research regarding evaluating the relationship between natural outdoor recreation spaces in the

urban environment and adolescent health is needed. These studies should give voice to adolescents, parents, and organizational representatives. If evidence can depict the relationship between aspects of urban natural recreational spaces and adolescent health, communities will also benefit from a community-based participatory approach in which diverse stakeholders contribute to plans for funding, designing, and evaluating natural spaces.

Conclusions

Inspired by the Franklin County health needs assessment 2019-2021, the social determinants of health, and adverse childhood experiences, the student researcher aimed to understand the role of the natural and urban environment's role on adolescent development. The theoretical framework of Erikson's adolescent stage of development (12–18 years old), and Bronfenbrenner's (1779) ecological systems theory guided the research framework. Specifically, four questions were asked, and results indicate that the ecological systems theory is highly relevant to understanding adolescent development and the domains that include the developing person. Most interview responses were directly related to the mesosystem, followed by the microsystem, macrosystem, exosystem, and chronosystem was not captured. Results of this research also show that direct experiences in natural outdoor settings in the neighborhood environment impacts youth health. Environmental factors include positive and negative aspects, which directly impacts adolescent health as it takes place in the most proximal domain to them, the microsystem. Organizations and neighbors support efforts to increase access to outdoor programming for youth but are limited in their access to funding to create large-scale programming that youth can access. Understanding the answers to the questions posed by the researcher contribute to the understanding of how outdoor spaces for recreation are accesses by marginalized youth and impacts their health. This also adds to the research a neighborhood

profile, which provides specific understanding of how these questions relate to specific neighborhoods within cities.

As a foundational study, the researcher also captured results that reflected the chronosystem; in fact, the chronosystem was at the heart of what interviewees shared, but this system was not explicated due to the omnipresent nature of the COVID-19 pandemic and its impact on the research, programs, and population. The researcher anticipates that the chronosystem will be reflected in future studies on adolescent health as it relates to access to the natural environment for recreation and the role that community programs play. Many of the innovations practitioners used in 2020 and 2021 will inform future programming for adolescents as the human relationship with the environment continues to change overtime.

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